

REMARKS

Claims 1-26 were pending. All stand rejected. By the above amendments, the Applicant has amended claims 1, 3, 11, 14, 17, 23 and 25. The Applicant hereby requests further consideration and re-examination in view of the amendments above and remarks set forth below.

Claims 8, 9, 10, 16, 23, 24, 25 and 26 are amended to correct minor informalities. No new matter has been entered. Additional amendments to the claims are discussed below.

Rejections under 35 U.S.C. § 103:

Claims 1-26 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent Application. Ser. No. 09/771,963 (hereinafter, "Bowen") in view of U.S. Patent No. 6,662,302 (hereinafter, "Garey").

The Applicant respectfully traverses the rejection on three separate grounds. First, it would not have been obvious to combine the Bowen and Garey references because there is not a suggestion to make the combination. Second, even if the Bowen and Garey references were properly combinable, such a combination would not suggest or disclose the Applicant's claim limitation of generating a plurality of configuration instruction sets. Both of these grounds were explained in detail in the Applicant's response filed on March 10, 2005, and are discussed again herein. In addition, by the above amendments, several of the claims are amended to more clearly recite a limitation of the original claims of selecting one of the plurality of generated configuration instruction sets by comparing characteristics of the configuration instruction sets to a user-defined criteria. This feature is not suggested by the Bowen and Garey references, even when considered in combination. This is a third ground on which the Applicant traverses the rejection. The Applicant would greatly appreciate the Examiner's careful consideration of each of these three distinct grounds because each provides a separate and independent reason why the Applicant's claims are allowable.

Regarding the first ground, that it would not have been obvious to combine the references, the Applicant previously explained that Garey is directed to a signal processing hardware circuit that is provided with multiple selectable configuration options and is, thus, able to perform a wide variety of operations to accommodate various input data. Garey at col. 3, lines 18-56 and Abstract. In contrast, Bowen is

directed to aiding a designer of a combined hardware and software system in optimally determining partitioning between the hardware and the software in the combined system. Bowen at paragraphs [008], [0027] and [0040]. Accordingly, Bowen and Garey are directed toward completely different problems encountered in completely different types of systems. Each provides a solution to address a particular problem encountered in the distinct system type to which it pertains. Therefore, it would not have been obvious to combine the references because there would not have been a motivation to make a combination of these different solutions to problems encountered in these different system types. For at least this reason, claims 1-26, which were rejected in view of the combination of Bowen and Garey, are allowable.

In the office action mailed on January 14, 2005, the Examiner stated that it would have been obvious to combine the teachings of Bowen and Garey “to obtain a circuit which can perform a wide variety of operations to accommodate various pluralities of input data [Column 1, lines 40-42].” In the response filed on March 10, 2005, the Applicant explained that this motivation is purported by Garey to be achieved by Garey alone. This is because Garey states that it provides a solution to the problem of conventional hardware signal processors typically providing only limited functionality and being unable to perform a substantially wide variety of operations to accommodate various input data. See Garey at col. 1, lines 33-42 and col. 2, lines 53-55. Because Garey alone already achieves this stated goal, the addition of features from Bowen would not further it. Accordingly, this rationale cannot provide a motivation to make the combination of Garey with Bowen.

Regarding the second ground, that even if combined, the Garey and Bowen references do not suggest or disclose all of the limitations of the rejected claims, the Applicant previously explained that neither reference discloses generating a plurality of configuration instruction sets. Regarding this claim feature, the Examiner stated in the office action mailed January 14, 2005, that Bowen teaches generating “a configuration instruction set” at paragraph [0298] of Bowen. Therefore, at most, Bowen discloses generating one configuration instruction set. While the programmable logic configuration circuitry of Garey selects a predetermined logic configuration from among a predetermined plurality of default logic configurations contained within the default configuration circuitry, Garey does not teach or suggest generating a plurality configuration instruction sets. Therefore, Garey does not

suggest or disclose this feature either. As is explained in the Manual of Patent Examining Procedure (M.P.E.P), “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” M.P.E.P. § 2143.03 (8th Ed. 2004). Because this feature is required by independent claims 1, 11, 17 and 23, but is not taught or suggested by Bowen and Garey, claims 1-26 are allowable.

In the office action mailed on May 27, 2005, the Examiner stated:

To further explain the Bowen – Garey combination, Bowen teaches a process for compiling a C function to a reconfigurable device. A function written in C programming language is received, parsed and optimized. The C function is compiled into processor instructions in operation 1104. In operation 1106, the processor instructions are used to generate hardware configuration information. In operation 1108, a Field Programmable Gate Array (FPGA) is configured using the hardware configuration information such that the function is compiled to the FPGA. Bowen also discloses that the methodology of the invention could also be applied to compile functions to reconfigurable logic devices other than FPGAs.

Garey teaches in figure 4, a logic configuration selection circuitry that selects at least one configuration option to program a programmable logic circuitry using various parameters including, among other things, a plurality of input data that is given to the processor.

In order to properly combine references under 35 U.S.C. § 103, the following basic tenets must be adhered to: (A) the claimed invention must be considered as a whole; (B) the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (C) the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (D) reasonable expectation of success is the standard with which obviousness is determined. M.P.E.P. § 2141 (8th Ed. 2004), citing *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

The Applicant submits that the Examiner’s statements above do not explain how Bowen and Garey, each taken as a whole, suggest the combination of features which the Applicant has claimed. For example, taken as a whole, the Garey reference is directed to a signal processing hardware circuit that is provided with multiple selectable configuration options and is, thus, able to perform a wide variety of

operations to accommodate various input data. In addition, taken as a whole, the Bowen reference is directed to aiding a designer of a combined hardware and software system in optimally determining partitioning between the hardware and the software in the combined system. See, for example, Background of Bowen, Figure 1 of Bowen and paragraphs [0013] through [0296] of Bowen. As a part of this scheme, Bowen teaches configuring the hardware by compiling a C function into processor functions and using the processor functions to generate hardware configuration information. See discussion beginning at paragraph [0297] of Bowen. The only motivation the Examiner has suggested for making the combination is to obtain a circuit which can perform a wide variety of operations to accommodate various pluralities of input data. As mentioned, however, Garey alone already achieves this stated goal. Thus, the addition of features from Bowen would not further it. This is particularly apparent when Bowen is considered as a whole in its context of optimally determining partitioning of hardware and software. Moreover, the Applicant submits that the Examiner's statements above do not explain how Bowen and Garey, each taken as a whole, teach or suggest generating a plurality of configuration instruction sets.

For the reasons given above, the Applicant submits that claims 1-26 are allowable.

Moreover, the Applicant has amended claims 1, 11, 17 and 23 to recite selecting one of the plurality of generated configuration instruction sets by comparing characteristics of the configuration instruction sets to a user-defined criteria. Claims 3, 14 and 25 are amended to be more consistent with the amendments to claims 1, 11 and 23, respectively. These amendments are supported by the Applicant's specification at least at page 12, lines 1-24. Neither Bowen, nor Garey, taken singly or in combination, suggest or disclose this feature of amended claims 1, 11, 17 and 23. This is apparent because Bowen, at most, discloses generating one configuration instruction set and, thus, cannot suggest any manner of selecting among a plurality of configuration instruction sets. Adaptive configuration circuitry 134 of Garey selects an alternative logic configuration in response to "a number of factors including, among other things, a plurality of input data that is provided to the signal processor." Garey at col. 3, lines 42-45. Thus, the only factor specified by Garey is "input data." This "input data" referred to by Garey is the signal to be processed by the signal processor. See Garey at col. 4, lines 15-16. Therefore, Garey does not teach or

suggest using user-defined criteria to select one of the configuration instruction sets. Moreover, Garey does not teach or suggest comparing characteristics of configuration instruction sets to a user-defined criteria to select one of the configuration instruction sets.

Therefore, Bowen and Garey do not teach or suggest such a combination of features, taken singly or in combination. Accordingly, this is another reason why claims 1-26 are allowable.


The Applicant submits that dependent claims recite further limitations that are not suggested or disclosed by Bowen or Garey. For example, dependent claim 3 recites determining characteristics for the each of the plurality of the configurable instruction sets; and selecting one of the plurality of configuration instructions sets based on determined the characteristics of that set, wherein the characteristics are compared to the user-defined criteria. Dependent claims 14 and 25 recite similar limitations. Neither Bowen nor Garey suggest or disclose such features. This is another reason why claims 3, 14 and 25 are allowable. As another example, dependent claim 4 recites that the step of determining characteristics comprises receiving simulation results associated with each configuration instruction set. Dependent claim 26 recites a similar limitation. The Examiner, in rejecting claims 4 and 26, simply states that this feature would have been obvious, but does not point out where in the prior art this feature is taught or suggested. As explained above, however, “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” M.P.E.P. § 2143.03 (8th Ed. 2004). This is another reason why claims 4 and 26 are allowable. As yet another example, claims 7 and 15 recited that the user defined criteria is the speed to complete a computation, size of circuit, and circuit power. Per claims 1 and 11, respectively, this is the user defined criteria to which the characteristics of the configuration instruction sets are compared. Because Bowen and Garey do not suggest or disclose comparing characteristics of the configuration instruction sets to a user-defined criteria, they cannot suggest or disclose that the user-defined criteria is the speed to complete a computation, size of circuit, and circuit power. This is another reason why claims 7 and 15 are allowable.

Conclusion:

In view of the above, the Applicant submits that all of the pending claims are now allowable. Allowance at an early date would be greatly appreciated. Should any outstanding issues remain, the Examiner is encouraged to contact the undersigned at (408) 293-9000 so that any such issues can be expeditiously resolved.

Respectfully Submitted,

Dated: Aug. 25, 2005



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